OR-WA Tsunami Inundation Modeling Report

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A. TIME

1. DEDICATION. Ceremonies to dedicate the Center for Tsunami Inundation Mapping Efforts (TIME) were held at the Hatfield Marine Science Center in Newport Oregon on 17 May 1997. A substantial effort was made to set up informative and educational displays for this event, including computer animations of several tsunami model simulations. Attendance and subsequent media coverage were excellent.

2. HARDWARE. A dual-processor Silicon Graphics work-station and a Macintosh 9600 have been acquired and installed. Both systems are being outfitted with software for data visualization, grid generation, and data archive.

3. TRAINING/MODEL TRANSFERS. Robert Kamphaus has been attending weekly training classes at OGI on tsunami inundation modeling. The OGI finite-element tsunami inundation model will be transferred to the TIME work station within the next few weeks. Vasily Titov's finite-difference tsunami inundation model will also be transferred to TIME in the near future.

4. DATABASE DEVELOPMENT. Bathymetric databases have been obtained from a number of sources, including NGDC's ETOPO5, Army Corps of Engineers surveys, and NOS hydrography. Searches have been conducted for bathymetry at several areas of interest. Searches for topographic data from USGS for a number of areas of interest have also been conducted. Several data processing methods and software packages for the bathymetry and topography databases are currently being evaluated, including Generic Mapping Tools (GMT--Univ. of Hawaii), Digital Optimization of Grid Systems (DOGS--NOAA HAZMAT), and ArcView/ArcInfo Geographic Information System (GIS).

B. DOGAMI

1. Advisory groups from local government and the port authorities at Warrenton-Astoria and Gold Beach have been organized and offered the opportunity to partner on the tsunami hazard mapping effort. Response has been good. Local government is currently installing warning and evacuation signs and welcomes the detailed inundation mapping to fine tune those efforts. They have been willing to help with outreach and, in the case of Gold Beach, there may be opportunities to combine resources to produce a variety of map products to help with local needs.

2. Available bathymetric data has been collected for both Gold Beach and Warrenton-Astoria.

3. A bid for the photogrammetric survey of Gold Beach is currently being advertised and will close on July 7, 1997. The bid specifically encourages responses that include cooperative work with local government and utilities that enhance the accuracy of the digital terrain model.

4. So far there has been no interest on the part of local government in Warrenton-Astoria for support of photogrammetry, so existing data will be used. This means that mylars of the 2-foot topographic contours for the shoreline will need to be sent from the Clatsop County Courthouse to NOAA for digitization of the shoreline topography. The understanding worked out with DOGAMI at the last meeting is that only contours of the shoreline features, such as foredunes and dikes, will be digitized.

5. George Priest of DOGAMI and Robert Kamphaus of NOAA have been making good progress in learning to use the finite element modeling software developed at OGI. The current course is being informally extended past the end of the academic term to further that training. George will be gone during July-September to do scheduled geologic field work on another project but will be available to help with numerical grid construction, etc. in October of 1997.

6. Earlier studies of the Cascadia fault dislocation models have been summarized in a paper and will be sent to a journal at the end of June.

7. Ongoing studies of inundation at Newport (NEHRP-supported) and Seaside (grant from Oregon Dept. of Justice) will be complete by the end of June. Both will include an analysis of local paleoseismic data, as well as modeled Cascadia tsunamis. A discussion is planned at the coordination meeting in Seattle to discuss the "worst case" inundation scenario for these maps. Moderate and low run-up cases will also be illustrated on the maps to show uncertainty and, in the case of the moderate inundation line, to implement Oregon Senate Bill 379, limiting construction of critical facilities. The worst case teletsunami, approximated by the Alaska 1964 event, will be shown on the Seaside map. No decision on mapping the 1964 teletsunami has been made for the Newport map, where local historical observations of the run-up (to ground truth modeling results) are hard to find. Both maps should be published this summer.

8. DOGAMI has awarded OGI the contract to perform the inundation modeling.

C. OGI

1. On-going studies led to the development at OGI (in close collaboration with DOGAMI) of a regional computer model for the study of generation and propagation of Cascadia Subduction Zone tsunamis. Local refinements of this model are providing the information necessary for the

generation by DOGAMI of detailed inundation maps for Yaquina Bay (funded by NEHRP) and Seaside (funded by the Oregon Dept. of Justice).

2. We expect to start in July, in collaboration with NOAA and the states of Oregon and Washington, a process of local refinement of the regional model to produce inundation maps for most critical coastal population centers in Oregon and Washington. This process will also act as a transfer mechanism for modeling technology to NOAA and DOGAMI.

3. In collaboration with NOAA and the states of Oregon and Washington, we are in the process of defining an unified criterion for tsunami sources to be used in (2). The definition will result from a re-evaluation of the experience of NOAA, DOGAMI and OGI in the surveying (where applicable), modeling and analysis of both Cascadia Subduction Zone and worldwide tsunamis.

4. A systematic transfer to TIME of the tsunami modeling technology used by OGI is taking place. This has involved attendance of NOAA and DOGAMI staff to an OGI graduate course, and will be extended in conjunction with (2).

5. OGI has requested a meeting to discuss technical details of the modeling effort for Oregon and Washington, and this will be held Wednesday evening, 18 June, after the first day of the Steering Group meeting.